

GFEINER call 10/14/79
F/AU TQM

DEAR MR. FABRIS,

PLEASE FIND A CHECK ENCLOSED FOR
TEN DOLLARS FOR SUBSCRIPTION RENEWAL
FOR THE "ARCADIAN".

AN APOLOGY FOR NOT RESPONDING TO
YOUR SURVEY SOONER. I HOPE I CAN
STILL GET ON YOUR MAILING LIST FOR
DETAILS ON THE KEYBOARD/MEMORY UNIT.
SURVEY RESPONSE:

1. - YES - I BOUGHT MY BALLY
WITH THE INTENTION
ON BUILDING TO A LARGER
SYSTEM AND COMPETITIVE
SYSTEMS WITH THE
GRAPHICS CAPABILITIES
OF THE BALLY ARE STILL
OVER \$1500.

2. - YES - IF USER EXPANSION IS
ACCOMMODATED.

3. - YES - I AM VERY INTERESTED
IN ALL EFFORTS IN
THIS DIRECTION.

MO.D. NO. BPA-1100 SER. NO. 6452

FOR MY PART, MY BALLY IS IN PIECES
ON MY WORKBENCH. I HAVE BEEN SUCCESSFUL
IN REPLACING THE 4K RAM CHIPS WITH
2116/2117 16K DYNAMIC RAM, WHICH IS
PIN FOR PIN COMPATIBLE EXCEPT FOR THE
CHIP SELECT PIN, WHICH IS ADDRESS SIX

ON THE 2117. WITH NO HARWARE MODIFICATIONS
THE BALLY SEES 4K AS NORMAL.
REFERENCING PA-1 SCHEMATIC, I ISOLATED
PIN 13 (\overline{CS}) FROM PIN 4 (\overline{RAS}) ON ALL
THE RAM CHIPS, RETIED PIN 13'S
TOGETHER, AND SUPPLIED A6 BY
CONSTRUCTING IT FROM A12 AND A13 FROM
THE Z-80 OR-TIED TOGETHER WITH OPEN-
COLLECTOR INVERTERS AND GATED TO
RAM A6 AT PX TIME (PIN 9, U20)
THROUGH THE UNUSED HALF OF U21.
RAM DYNAMIC REFRESH IS SUPPLIED
BY AGAIN OR-~~TIED~~ TYPING PINS 9, 10,
AND 11, U17, TOGETHER AND SUPPLYING
TO ^{U21}_{RAM} PIN 12.

THE OBJECTIVE OF THIS WAS TO
INCREASE THE RAM WITH THE MINIMUM
OF HARWARE TO SEE IF BALLY BASIC
WOULD RECOGNIZE IT. IT DIDN'T.
USING BALLY'S ADDRESSING CHIP(U17)
CAUSED SOME DISPLAY DISCONTINUITY
BUT THAT TOLD ME THE HARWARE
WAS AT LEAST PARTIALLY WORKING.
I'VE RETRENCHED AND AM EXPLORING
ANOTHER PROBLEM.

BY YOUR SUGGESTION, I ACQUIRED

A COPY OF "PCCS REFERENCE BOOK" AND STUDIED WANG'S ORIGINAL TINY BASIC. RAM LIMITS ARE FIXED IN HIS SOFTWARE BUT CERTAIN ROUTINES (LIKE "PRINT \$Z") MUST REFERENCE THEM ACTIVE TIME. WITHOUT BORING YOU WITH DETAILS, I USED THE FOLLOWING TO FIND THE PROGRAM START ADDRESS (16384_{10}) PLUS USER MAXIMUM SIZE (1800_{10}) WHICH EQUALS THE PROGRAM UPPER LIMIT (18184_{10}):

```
1818410 = 470816 (ARCADIAN P.25)
084716 = 106310
10 FOR I = -32780 TO 32780
20 IF %I(I) = 1063 PRINT I
30 NEXT I
```

THE PROGRAM RAN FOR ABOUT A HALF HOUR BEFORE THE FOLLOWING ADDRESS PRINTED: 11018, WHICH TRANSLATES TO $280A_{16}$, A ROM VALUE. I BREADBOARDED A "PHANTOM ROM" CIRCUIT TO THE EXPANSION CONNECTOR WHICH USES MAGNITUDE COMPARATORS TO MONITOR THE ADDRESS BUS AND ③

STROBE PIN 47 LOW WHEN IT MATCHES
2B0A₁₆, WHICH DISABLES THE ROM'S.
SO FAR THE BALLY DOESN'T SEEM TO
KNOW MY CIRCUIT IS THERE SO
MORE EXPERIMENTATION IS NEEDED.
ANY SUGGESTIONS ARE APPRECIATED. I DON'T
KNOW HOW INTERESTING ALL THIS IS
TO YOU BUT IF IT IS USEFUL TO
ANYONE PASS IT ON. I haven't
INCLUDED SCHEMATIC BECAUSE I'M
SCEPTICAL OF MY CIRCUITRY AND WOULD
RATHER NOT WASTE ANYONE ELSE'S
TIME IF I'M WAY OFF IN LEFT FIELD.
IF I EVER GET REAL RESULTS
BEFORE ANYONE ELSE, I'LL WRITE A
TUTORIAL FOR THE ARCADE.

ALSO, CONTACTING JAMES ELECTRONICS
ABOUT THE CHERRY KEYBOARD (P-47)
I FOUND THE PRICE IS NOW \$34.95.
I DID BUY A KEYBOARD FROM ANCHOR
ELECTRONICS, 2102A WALSH AVE, SANTA
CLARA (246-3696), WHICH IS ~~OUT OF~~
A SURPLUS VIDEO BRAIN KEYBOARD FOR
\$17.50. IT'S FOUR COLUMNS BY NINE
ROWS SWITCH MATRIX. I WOULD
APPRECIATE INFO ON HOW THE CHERRY @

KEYBOARD WAS INTERFACED. ANCHOR ALSO OFFERS A PROM PROGRAMMING SERVICE, WHICH MIGHT BE USEFUL FOR THE KEYBOARD/MEMORY UNIT.

I PLAN TO CONTACT AMERICAN MICROSYSTEMS, INC. (AMI) FOR DATA SHEETS ON THE CUSTOM I.C.'S.

A RECENT ATTEMPT TO LIST MY PROGRAMS FROM MY CASSETTE PLAYER THROUGH THE AUDIO INTERFACE/PRINTER CONNECTION TO A DEC PDP-11/34 COMPUTER AND HIGH SPEED LINE PRINTER WAS SUCCESSFUL, THOUGH BALLY "PRINT", "IF", ETC. CHARACTERS WERE TRANSLATED BY THE COMPUTER AS LETTERS.

FINALLY, I WOULD LIKE TO GET A COPY OF THE 200-PAGE DOCUMENT (P. 83) - I LIVE A FEW BLOCKS FROM YOU AND HAVE COPYING FACILITIES AT WORK. IF YOU WOULD BE WILLING TO LOAN THE DOCUMENT FOR A DAY. IF NOT, I'M STILL INTERESTED IN SOME ARRANGEMENT.

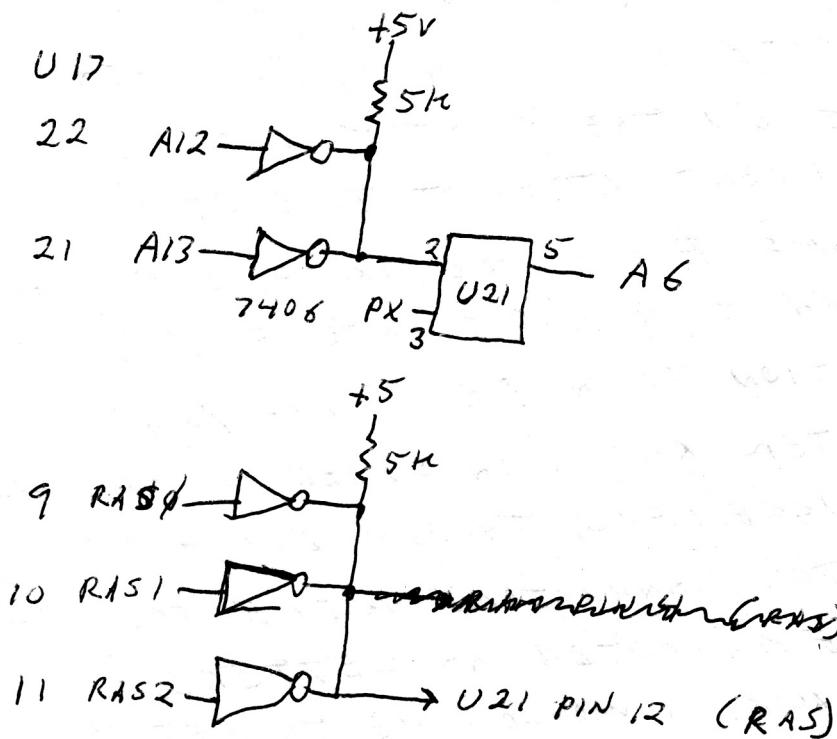
HOPES THIS WAS INFORMATIVE,

(OVER)

Frank Tscheller

(5)

P.S. YOU PENNED A NOTE ON MY LAST
ARCIADIAN THAT PA-1 IS STILL
BACK ORDERED. I GOT PA-1, THANKS.



P.P.S. I WOULD LIKE TO SEE THE
OPERATING SYSTEM ACCOMODATE
A FLOPPY DISK.